

**What is claimed is:**

1        1.    An organic electroluminescent device, comprising:  
2        a substrate;  
3        a first electrode on the substrate;  
4        an organic luminescent layer on the first electrode;  
5        a second electrode on the organic luminescent layer,  
6                between the first electrode and the second  
7                electrode; and  
8        a nanostructured organic electroluminescent recovery  
9                layer.

1        2.    The organic electroluminescent device as claimed  
2    in claim 1, wherein the nanostructured organic  
3    electroluminescent recovery layer is on the substrate  
4    between the substrate and the first electrode.

1        3.    The organic electroluminescent device as claimed  
2    in claim 1, wherein the nanostructured organic  
3    electroluminescent recovery layer is on the first electrode  
4    between the first electrode and the organic luminescent  
5    layer.

1        4.    The organic electroluminescent device as claimed  
2    in claim 1, wherein the nanostructured organic  
3    electroluminescent recovery layer is on the organic  
4    luminescent layer between the organic luminescent layer and  
5    the second electrode.

1        5.    The organic electroluminescent device as claimed  
2    in claim 1, wherein the nanostructured organic

3 electroluminescent recovery layer is on the second  
4 electrode.

1       6. The organic electroluminescent device as claimed  
2 in claim 1, wherein the organic luminescent layer comprises  
3- a single organic luminescent layer.

1       7. The organic electroluminescent device as claimed  
2 in claim 1, wherein the organic luminescent layer comprises  
3 stacked organic luminescent layers.

1       8. The organic electroluminescent device as claimed  
2 in claim 1, wherein the organic luminescent layer comprises  
3 fluorescent luminescent material or phosphorescent  
4 luminescent material.

1       9. The organic electroluminescent device as claimed  
2 in claim 1, wherein the organic luminescent layer comprises  
3 molecular organic luminescent material.

1       10. The organic electroluminescent device as claimed  
2 in claim 1, wherein the organic luminescent layer comprises  
3 polymer organic luminescent material.

1       11. The organic electroluminescent device as claimed  
2 in claim 1, wherein the substrate is transparent or opaque  
3 glass or plastic.

1       12. The organic electroluminescent device as claimed  
2 in claim 11, wherein the plastic substrate is selected from  
3 the group consisting of polyethyleneterephthalate,  
4 polyester, polycarbonate, polyimide, Arton, polyacrylate and  
5 polystyrene.

1        13. The organic electroluminescent device as claimed  
2 in claim 1, wherein the first electrode is transparent,  
3 metal, or complex.

1        14. The organic electroluminescent device as claimed  
2 in claim 1, wherein the second electrode is transparent,  
3 metal, or complex.

1        15. The organic electroluminescent device as claimed  
2 in claim 13, wherein the transparent electrode is ITO, IZO,  
3 AZO or ZnO.

1        16. The organic electroluminescent device as claimed  
2 in claim 14, wherein the transparent electrode is ITO, IZO,  
3 AZO or ZnO.

1        17. The organic electroluminescent device as claimed  
2 in claim 13, wherein the metal electrode is selected from  
3 the group consisting of Li, Mg, Ca, Al, Ag, In, Au, Ni, Pt,  
4 and alloys thereof.

1        18. The organic electroluminescent device as claimed  
2 in claim 14, wherein the metal electrode is selected from  
3 the group consisting of Li, Mg, Ca, Al, Ag, In, Au, Ni, Pt,  
4 and alloys thereof.

1        19. The organic electroluminescent device as claimed  
2 in claim 13, wherein the complex electrode comprises stacked  
3 layer electrodes of Li, Mg, Ca, Al, Ag, In, Au, Ni, Pt, ITO,  
4 IZO, AZO or ZnO.

1        20. The organic electroluminescent device as claimed  
2 in claim 14, wherein the complex electrode comprises stacked  
3 layer electrodes of Li, Mg, Ca, Al, Ag, In, Au, Ni, Pt, ITO,  
4 IZO, AZO or ZnO.

1        21. The organic electroluminescent device as claimed  
2 in claim 1, wherein the nanostructured organic  
3 electroluminescent recovery layer is a nanostructured thin  
4 film layer comprising dielectric material and nanoscale  
5 metal particles.

1        22. The organic electroluminescent device as claimed  
2 in claim 21, wherein the dielectric material for the  
3 nanostructured organic electroluminescent recovery layer is  
4 selected from the group consisting of silicides, oxides,  
5 carbides, nitrides and combinations thereof.

1        23. The organic electroluminescent device as claimed  
2 in claim 21, wherein the dielectric material for the  
3 nanostructured organic electroluminescent recovery layer is  
4 selected from the group consisting of silicon oxide,  
5 aluminum oxide, magnesium oxide, silicon nitride, aluminum  
6 nitride and magnesium fluoride.

1        24. The organic electroluminescent device as claimed  
2 in claim 21, wherein the nanoscale metal particles is  
3 selected from the group consisting of Au, Ag, Al, Ge, Se,  
4 Sn, Sb, Te, Ga or combinations thereof.

5        25. The organic electroluminescent device as claimed  
6 in claim 21, wherein the dielectric material and the

7 nanoscale metal particles for the nanostructured organic  
8 electroluminescent recovery layer are formed at the same  
9 time using the same or different methods, and the nanoscale  
10 metal particles are doped into the dielectric material.

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2 in claim 1, wherein the nanostructured organic  
3 electroluminescent recovery layer is a nanostructured thin  
4 film layer comprising organic material and nanoscale metal  
5 particles.

1 27. The organic electroluminescent device as claimed  
2 in claim 26, wherein the organic material of the  
3 nanostructured organic electroluminescent recovery layer  
4 comprises molecular or polymer organic material.

1 28. The organic electroluminescent device as claimed  
2 in claim 26, wherein the nanoscale metal particles is  
3 selected from the group consisting of Au, Ag, Al, Ge, Se,  
4 Sn, Sb, Te, Ga and combinations thereof.

1 29. The organic electroluminescent device as claimed  
2 in claim 26, wherein the organic material and the nanoscale  
3 metal particles for the nanostructured organic  
4 electroluminescent recovery layer are formed at the same  
5 time using the same or different methods, and the nanoscale  
6 metal particles are doped into the organic material.

1 30. An organic electroluminescent device, comprising:  
2 a substrate;  
3 a first electrode on the substrate;  
4 an organic luminescent layer on the first electrode;

5       a second electrode on the organic luminescent layer,  
6           between the first electrode and the second  
7           electrode;  
8       a first nanostructured organic electroluminescent  
9           recovery layer; and  
10       a second nanostructured organic electroluminescent  
11           recovery layer.

1       31. The organic electroluminescent device as claimed  
2 in claim 30, wherein the first nanostructured organic  
3 electroluminescent recovery layer is on the substrate and  
4 between the substrate and the first electrode.

1       32. The organic electroluminescent device as claimed  
2 in claim 30, wherein the first nanostructured organic  
3 electroluminescent recovery layer is on the first electrode  
4 between the first electrode and the organic luminescent  
5 layer.

1       33. The organic electroluminescent device as claimed  
2 in claim 30, wherein the second nanostructured organic  
3 electroluminescent recovery layer is on the organic  
4 luminescent layer between the organic luminescent layer and  
5 the second electrode.

1       34. The organic electroluminescent device as claimed  
2 in claim 30, wherein the second nanostructured organic  
3 electroluminescent recovery layer is on the second  
4 electrode.